OIPE

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/593,828

DATE: 06/27/2000 TIME: 08:50:15

Input Set : A:\SEQLIST.TXT.txt

Output Set: N:\CRF3\06272000\I593828.raw

4 <110> APPLICANT: Rosen, Steven
5 Hemmerich, Stefan
7 <120> TITLE OF INVENTION: Novel Glycosyl Sulfotransferases
10 <130> FILE REFERENCE: 6510-138US1
C--> 12 <140> CURRENT APPLICATION NUMBER: US/09/593,828
C--> 12 <141> CURRENT FILING DATE: 2000-06-13
12 <150> PRIOR APPLICATION NUMBER: 60/144,694
13 <151> PRIOR FILING DATE: 1999-07-20
15 <160> NUMBER OF SEQ ID NOS: 23
17 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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105 ctacagecae gtggtgetea aggaggtgeg ettetteaae etgeaggtge tetaceeget 106 geteagegae eeeggetea acetgegeat egtgeacetg gtgegegaee egggggeegt 107 getgegetee egggaggegg egggeeegat actggeaege gacaaeggea tegtgetgg 108 caccaaegge aagtgggtgg aggeegaee teacetgege etgattegeg aggtgtgeeg 109 960											
106 geteagegae eegggeetea acetgegeat egtgeaeetg gtgegegae egegggeegt 840 107 getgegetee egggaggegg egggeeegat actggeaege gacaaeggea tegtgetggg 900 108 caccaaegge aagtgggtgg aggeegaee teacetgege etgattegeg aggtgtgeeg 960	104 cgtatgcaag acactgtgca cgcggcagcc attcagcct	g gcccgggagg	g cetgeegete								
107 getgegetee egggaggegg egggeeegat actggeaege gacaaeggea tegtgetggg 900 108 caccaaegge aagtgggtgg aggeegaeee teacetgege etgattegeg aggtgtgeeg 960											
108 caccaacggc aagtgggtgg aggccgaccc teacctgcgc etgattegeg aggtgtgeeg 960	10b gctcagcgac cccgcgctca acctgcgcat cgtgcacct	g gtgcgcgaco	c cgcgggccgt								
LUY cagecaegig egealegeeg aggeegeeae acteaageeg ceaecettee tgegeggeeg 1020											
	The captuacting encatedeed addeedees setesandee	g ccaccetted	tgcgcggccg	1020							

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/593,828 DATE: 06/27/2000 TIME: 08:50:15

Input Set : A:\SEQLIST.TXT.txt
Output Set: N:\CRF3\06272000\1593828.raw

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112	ccacgggtcg	gggatcggca	agccaatcga	ggccttccat	acttcgtcta	ggaatgcgcg	1200			
113	caacgtctcc	caggcctggc	gccacgcgtt	gcccttcact	aagatcctgc	gcgtgcagga	1260			
114	ggtgtgcgcc	ggcgcgctgc	agctgctggg	ctaccggcct	gtgtactctg	cggaccagca	1320			
115	gcgtgacctc	accctggatc	tggtgctgcc	acgaggccca	gaccacttca	gctgggcatc	1380			
116	gcctgactga	gaactctggg	ccttagagca	agccccgaac	tgtggtcgcc	aggcccagga	1440			
117	agcgactgca	tggtggaaaa	ggagctgggg	cgcatgggga	acaggtccct	actatcaacc	1500			
118	gggagtttgg	ggtcctcccc	tgaagtaagc	aaggactgca	cgtttctttc	tctcctgatt	1560			
119	ctcggttttc	ctttgagtct	tctggagctg	ccttctcatc	aggtgcactc	ttcatqqaaa	1620			
120	agcaactctt	gcccctacct	cttctgggcg	cagggagt.aa	gttactqcta	aattaaatta	1680			
121	aatgtgtgcc	aggccgggtg	cggtggctca	tgcctgtaat	cccagcattt	tgagaggetg	1740			
122	aggcgggtgg	atcacctgag	gtcaggattc	aaaaccaqcc	tggccaacat	agtgaaaccc	1800			
123	cctctctact	aaaaatgcaa	aaattagtcc	aacataataa	cacactcctq	taatcccagc	1860			
124	tacttaggag	gctgaggtgg	gaaaatcact	tggactccaa	aggtggaggt	tgcagtaagc	1920			
125	tgaaatcatg	ccactgcacc	ctagettggg	tggcaaagca	aaactctatc	aaaaaaataa	1980			
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136	tgcctcctgc	tetteateat	ctcccggcca	gggccctcat	ccccaaccaa	caacaaaaat	120			
	cgtgtgcacg						180			
138	ttcagccagc	accccgacgt	cttctacctq	atggagggg	cataggatat	atageccacc	240			
139	ctgtcgcagg	acaacacaac	aacgctgcac	atagecatae	acaacataat	geggactate	300			
140	tttttgtgcg	acatogacot	atttaatacc	tacatoccac	adadccaaaa	gegetetate	360			
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142	cgaggcacca	tragraagra	ggacgtatgc	aagagagtgt	gaaaaaaaa	ggggttggg	420			
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149	coccedante	testaggaga	cegeageeae	gracegearca	ccgaggeege	cacactcaag	780			
140	ccgccaccct	antagagag	cegetaeege	etggtgeget	Legaggaeet	ggcgcgggag	840			
150	ccgctggcag	agarcegege	actoracgee	ttcaccggcc	tgaccctcac	gccacagete	900			
151	gaggcctgga	ataggastas	cacceaeggg	Leggggateg	gcaagccaat	egaggeette	960			
151	catacttcgt	craygaarge	gegeaaegte	teccaggeet	ggcgccacgc	gttgcccttc	1020			
152	actaagatcc	tgegegtgea	ggaggtgtgc	gccggcgcgc	tgcagctgct	gggctaccgg	1080			
154	cctgtgtact	ccgcggacca	gcagcgtgac	cccaccctgg	acctggtgct	gccacgaggc	1140			
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RAW SEQUENCE LISTING PATENT APPLICATION: US/09/593,828 DATE: 06/27/2000 TIME: 08:50:15

Input Set : A:\SEQLIST.TXT.txt
Output Set: N:\CRF3\06272000\I593828.raw

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164	tgtatatcgg	gctttgcttc	tttaaattcc	caaactctgc	tagttgttga	tcatattgag	180			
165	aggcaagaag	attccccaat	aaattctgtc	agtgccttct	ttcataattt	ggatattgat	240			
166	tttaaatata	tcccatataa	gtttatgaat	aggtataatg	gtgccatgat	ggatgtgtgg	300			
167	gatgcacatt	acaaaatgtt	ttggtttgat	catcatggca	atagtcccat	ggccagtata	360			
168	caggaagcag	agcaagctgc	tgaatttaaa	aaacgatgga	ctcaatttgt	taatgttact	420			
169	tttcagatgg	aatccacaat	cacaagaatt	gcatatgtct	tttatgggcc	atatatcaat	480			
170	gtctccagct	gcagatttat	tgatagttcc	aatcctggac	ttcagatttc	tctcaatgtc	540			
171	aataatactg	aacatgttgt	ttctattgta	actgattacc	ataacctgaa	gacaagattc	600			
172	aattatctgg	gattcggtgg	ctttgccagt	gtggctgatc	aaggccaaat	aacccgattt	660			
173	ggtttgggca	ctcaagcaat	agtaaagcct	gtaagacatg	ataggattat	tttccccttt	720			
174	ggatttaaat	ttaatatagc	agttggatta	attttgtgca	ttagcttggt	gattttaact	780			
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177	gcaaaatgga	caaggacaga	ggctgaggga	agcaagaagt	ctttgtcttc	tgaagggcac	960			
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180	gatattcctg	aaactgagtt	ggaaatcgac	tcatttgtag	atgcttgtga	atggaaggtg	1140			
181	tcagatatcc	gcagtgggca	ttttcgttta	ctccgaggct	ggttgcagtc	tttagtccag	1200			
182	gacacaaaat	tacatttgca	aaacatccat	ctgcatgaac	ccaataqqqq	taaactggcc	1260			
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191	gcagccttga	gaataaatac	agatttqctq	cctactagct	accagetggt	caagtttgaa	1800			
192	gatattgtgc	attttcctca	gaaaactact	gaaaggattt	ttgcctttct	tggaattcct	1860			
193	ttgtctcctg	ctagtttaaa	ccaaatattq	tttgccacct	ctacaaacct	tttttacctt	1920			
194	ccctatgaag	qqqaaatatc	accaactaat	actaatgttt	ggaaacagaa	cttqcctaga	1980			
195	gatgaaatta	aactaattga	aaacatctgc	tggactctga	tagategeet	aggatatoca	2040			
196	aagittatgg	actaaatgct	gcaggtcagc	agaaatttgc	actaataata	cttaccaacc	2100			
197	cactttgtgg	atatgaatca	gaagagtttg	tttattcttt	agtatatata	tatatatata	2160			
198	cacgcgtgta	tatattcaat	gttgtttgca	cagagagatt	gttttaaaaa	atggcaccat	2220			
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201	ggagatggga	aaattttaag	tttttgtcta	actoccotto	atctgtaact	atactaatet	2400			
202	atctagagac	ctcaaacact	gctaaaggcc	ttgcaattgc	tactttaccc	acquatetet	2460			
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RAW SEQUENCE LISTINGPATENT APPLICATION: US/09/593,828

DATE: 06/27/2000

TIME: 08:50:15

Input Set : A:\SEQLIST.TXT.txt

Output Set: N:\CRF3\06272000\I593828.raw

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216	agttccaatc	ctggactto	ca gattt	ctctc	aa	tgtc	aata	ata	ctga	aca	tgtt	gtttct	300
217	attgtaactg	attaccata	aa cctga	agaca	aqa	atte	aatt	atc	taga	att	caat	gacttt	360
218	gccagtgtgg	ctgatcaac	g ccaaa	taacc	cqa	attt	aatt	taa	gcac	tca	agca	atagta	420
219	aagcctgtaa	gacatgata	ig gatta	ttttc	ccc	ettt	ggat	tta	aatt	taa	tata	gcagtt	480
220	ggattaattt	tatacatta	ag cttaa	tgatt	tta	aact	ttcc	aat	aaca	ttt	ttac	ctttct	540
221	tttagaaaac	taatqcqat	g gatat	taata	cti	tatt.	attα	cct	tata	att	tatt	gagett	600
222	ttggatgtgt	ggagcactt	g tagto	agece	ati	ttat	acea	aat	aaac	aan	dace	gagoet	660
223	gagggaagca	agaagtett	t atet	ctosa	aaa	rcac	caca	taa	994C	too	tast	attata	720
224	attacctcac	tteetaati	c aggag	ctgaa	ati	ctc	2220	aac.	++++	+++	Caso	antant	780
225	gattttctct	acatcagg	rt toota	cagee	· +a/	72++	rata	++0	ctcc	220	taac	ttaas	
226	atcgactcat	ttatagata	t tteta	zatee		att.	taca	200	tesa	aac	Lyay	LLYYdd	840
227	cattteatea	gaggetagate	t accet	aatyy	aay	<i>39</i>	ccag	ala	LCCG	cag	Lggg	Cattt	900
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220	atccatctgc	argaacccc	ia Laggy	glaad	CEG	39ec	caat	att	ttgc	aat	gaat	aaggac	1020
229	aaaaaaagaa	adillada	ig gagag	agtet	tte	gcca	gaac	aaa	gaag	tca	aatg	aaaggc	1080
230	gcctttgata	gagatgete	ja atata	ttagg	gcı	cttg	agga	gac	acct	ggt	ttac	tatcca	1140
23I	agtgcacgtc	ctgtgctca	ig tttaa	gcagt	gga	aagc	tgga	cgt.	taaa	gct	tcat	ttttt	1200
232	caggaagttt	taggagett	c gatga	gggca	tt	gtac	atag	taa	gaga	ccc	tcgg	gcatgg	1260
233	atttattcaa	tgttgtaca	ia tagta	aacca	agt	ctt	tatt	ctt	tgaa	gaa	tgta	ccagag	1320
234	catttagcaa	aattgttta	ia aatag	aggga	ggt	caaa	ggca	aat	gtaa	ctt	aaat	tcgggt	1380
235	tatgctttcg	agtatgaac	cc attga	ggaaa	gaa	itta	tcaa	aato	ccaa	atc	aaat	gcagtg	1440
236	tecetettgt	ctcacttgt	g gctag	caaat	aca	igca	gcag	ccti	tgag.	aat	aaat	acagat	1500
237	ttgctgccta	ctagctacc	ca gctgg	tcaag	ttt	gaag	gata	ttg	tgca	ttt	tect	cagaaa	1560
238	actactgaaa	ggatttttg	c ctttc	ttgga	att	cct	ttgt	ctc	ctgc	tag	ttta	aaccaa	1620
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252		20			25					30			
253	Ser Pro Ala	Gly Leu	Gly Glu	Arg	Val	His	Val	Leu	Val	Leu	Ser	Ser	
254	35			40					45				
255	Trp Arg Ser	Gly Ser	Ser Phe	Val	Gly	Gln	Leu	Phe	Ser	Gln	His	Pro	
256	50		55					60					
257	Asp Val Phe	Tyr Leu	Met Glu	Pro	Ala	Trp	His	Val	Trp	Asp	Thr	Leu	
258	65		70			_	75		-	•		80	
259	Ser Gln Gly	Ser Ala	Pro Ala	Leu	His	Met	Ala	Val	Arq	Asp	Leu		
260	-	85				90					95		
261	Arg Ser Val	Phe Leu	Cys Asp	Met .	Asp	Val	Phe	Asp	Ala	Tyr		Pro	
262	-	100	- •		105					110			
263	Trp Arg Arg	Asn Ile	Ser Asp	Leu	Phe	Gln	Trp	Ala	Val	Ser	Ara	Ala	
264	115		-	120			•		125				

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

VERIFICATION SUMMARY

DATE: 06/27/2000

PATENT APPLICATION: US/09/593,828

TIME: 08:50:16

Input Set : A:\SEQLIST.TXT.txt
Output Set: N:\CRF3\06272000\I593828.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application No L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date L:4156 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20